

Chemistry Year 9 Curriculum Overview

	Autumn		Spring		Summer
	Learning Cycle 1	Learning Cycle 1	Learning Cycle 2	Learning Cycle 2	Learning Cycle 3
Topic	Atomic Structure	The Periodic table	Structure and Bonding	Equations	Carbon Chemistry
Critical Prior Knowledge	Atomic Structure Y7: Particle model. Y8 Atoms and elements	KS3: Particle model, mixtures and solubility Atoms and elements; Periodic Table; Metals and non-metals Atomic Structure	KS3: Atoms and elements, mixtures and solubility, Periodic Table Atomic structure	KS3: Atoms and elements Periodic Table Structure and Bonding	Structure and bonding of carbon.
Overall Intent (Big ideas and key concepts)	<p>The structure of the atom, including a nucleus containing protons and neutrons, surrounded by electrons within electron shells.</p> <p>Relative masses and charges of these subatomic particles.</p> <p>Early models of the atom including understanding of the plum pudding model and the Bohr model.</p>	<p>The arrangement of elements in groups and periods on the periodic table</p> <p>The development of the periodic table including the work of Mendeleev</p> <p>Identifying and explaining the trends in reactivity of group 0, 1 and 7 elements</p> <p>Reactivity and properties of transition metals compared to group 1</p>	<p>Explaining the bonding and properties of ionic, covalent and metallic substances.</p> <p>The bonding in giant covalent substances.</p> <p>Allotropes of carbon, their applications and properties linked to bonding. Introduction to nanoparticles. Their properties and uses.</p>	Chemical reactions can be written as word and symbol equations.	Crude oil and fractional distillation. Alkanes, alkenes and the uses, structure and properties of these.

Essential Knowledge milestones (What students must master)	Determination of the atomic structure for any given element up to calcium. Properties of subatomic particles. The definition of isotope. Understanding of the plum pudding model and Bohr model of the atom and how these compare to today's models.	To build on previous understanding of the organisation of elements in the periodic table and how this links to physical and chemical properties. To understand the historical development of the periodic table.	To build on understanding of elements and compounds developed in KS3 in order to use explain physical and chemical properties of materials. Scientists use this knowledge of structure and bonding to engineer new materials with desirable properties. The properties of these materials may offer new applications in a range of different technologies.	To build on previous understanding of compounds and be able to write chemical equations, both word and symbol, to describe reactions happening.	Students are introduced to the important area of organic chemistry which is so important that it forms a separate branch of chemistry. Students will learn the role organic compounds have as fuels and as the basis of many chemical compounds and materials. Although knowledge of organic chemistry is new, links are draw to work done previously in structure and bonding and material chemistry. There are also links here to work covered in biology when looking at natural polymers.
Cultural Capital		- Practical techniques, health and safety, development of fine motor and dexterity skills	-Communication of Science ideas and concepts		Moral capital- Polymers, plastic and uses and disposal - Environmental impacts of fossils fuels and problems of renewables
Assessment Points	Regular Afl embedded into lessons, marked tasks. <u>Knowledge assessments</u> Atomic structure and the Periodic table Term 1 – Application Assessment	Regular Afl embedded into lessons, marked tasks. <u>Knowledge assessments</u> Bonding, Equations Term 2 – Application Assessment	Regular Afl embedded into lessons, marked tasks. <u>Knowledge assessments</u> Bonding, Equations Term 2 – Application Assessment	Regular Afl embedded into lessons, marked tasks. <u>Knowledge assessments</u> Carbon Chemistry Term 3 – Application Assessment	
ECC Student Characteristics	Through these units we will encourage students to work hard and be resilient individuals who embrace challenge and through their creativity and endeavours become reflective learners . Mastering the key concepts of each topic before being able to build on these ideas as they are interleaved through other units later in the course.				

Connection to future learning (When is this developed / revisited)?	Periodic table	Bonding	Carbon Chemistry	All future chemical reactions	Polymers
	Bonding	Carbon Chemistry	Electrolysis		New Materials
	Carbon Chemistry	Reactivity series of Metals	Extraction of Metals		
		Reactivity of acids			